

REMARKS

Claims 1-20 are pending in the present application.

Claims 12 and 20 have been amended to correct “claims” to “claim.”

Claims 6 and 16-19 have been objected to because of a typographical error.

In response, Applicants have amended claims 6 and 16-19 to correct the typographical error by changing “colorimetry” to “calorimetry.” Accordingly, withdrawal of the objection of claims 6 and 16-19 is requested.

Claims 1-20 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Autran (US 2003/0204027) in view of Shimizu (US 2002/0173583) taken with McGraw “New Uses for Kenaf.”

Applicants submit that this rejection should be withdrawn because Autran, Shimizu and McGraw do not disclose or render obvious the composition or molded product of the present invention, either alone or in combination.

The present invention relates to a composition which comprises kenaf fibers and a poly(3-hydroxyalkanoate) (abbreviation: P3HA) produced by microorganisms and comprising a repeating unit represented by the formula (1): $[-O-CHR-CH_2-CO-]$. In the formula, R represents an alkyl group represented by C_nH_{2n+1} with n representing an integer of 1 to 15.

By the above constitution, the present invention provides a plant origin biodegradable composition and a molded product thereof, which are excellent in processability, strength, impact resistance, heat resistance and water resistance at the same time. Particularly by adding the kenaf fibers, the composition and the molded product thereof are improved in rate of crystallization, heat resistance and impact resistance. See page 6, lines 16-23; Examples and Table 1 at page 25 of the specification.

In Table 1, improvement in rate of crystallization is shown by Tc1. As disclosed at page 23, lines 4-5 of the specification, when there is a Tc1, the resin can be said to easily crystallize. In Comparative Examples 1 to 3, which did not employ kenaf, there was no Tc1, whereas Invention Examples 1 to 3 containing kenaf had a Tc1, and therefore had an improved rate of crystallization. In Table 1, heat resistance is shown by HDT and impact resistance is shown by IZOD impact value.

In contrast, Autran relates to a plastic product comprising a biodegradable polyester blend composition, wherein the biodegradable polyester blend composition comprises (a) a polyhydroxyalkanoate copolymer comprising at least two randomly repeating monomer units and (b) an aliphatic ester polycondensate. See the abstract and paragraphs [0051]-[0057]. Autran discloses that the composition is tough, ductile and biodegradable by this constitution. See paragraph [0051]. Moreover, Autran discloses that the composition may further include various additives such as inert fillers and the like. See paragraph [0113]. However, Autran discloses in paragraphs [0111] and [0113] that the composition is preferably free of the additives, and that the additives are not required in the composition in order to obtain the toughness, ductility and other attributes. Namely, Autran does not positively add fillers to the composition. Furthermore, as the Examiner recognizes, Autran does not teach the filler being made of kenaf fibers.

Shimizu relates to an organic fiber filler-containing polypropylene resin composition comprising a polypropylene resin and an organic fiber filler, wherein the polypropylene resin satisfies the specific equation of a melt tension and an intrinsic viscosity. See paragraphs [0009]-[0013]. Shimizu only describes that an article which is excellent in moldability and strength can be provided by using the polypropylene resin satisfying the specific equation of a melt tension

and an intrinsic viscosity. See paragraph [0006]. Shimizu does not intend biodegradability at all and does not relate to a biodegradable polyester composition. Accordingly, one of ordinary skill in the art would not combine the teaching of Shimizu with that of Autran.

The Examiner asserts that Shimizu teaches using a kenaf filler in a filled polymer. However, Shimizu merely discloses "kenaf" as one embodiment of various organic fiber fillers that can be used, and Shimizu discloses that preferred fillers include wood powder, wood chip, chaff or mixtures of two or more kinds thereof. See paragraph [0028]. Shimizu does not disclose any examples where kenaf is employed as a filler, and the Examples in Shimizu do not show a change based on different fillers in the polymer. See Table 1 of Shimizu. Accordingly, Shimizu does not suggest that the unexpectedly superior results of the present invention, especially improvement in rate of crystallization, heat resistance and impact resistance, can be obtained by adding the kenaf fiber.

McGraw only discloses that kenaf's strength and low weight make it less likely to shatter or warp under extreme temperatures. McGraw does not intend biodegradability and does not suggest that the unexpectedly superior results of the present invention, especially improvement in rate of crystallization, heat resistance and impact resistance, can be obtained by adding the kenaf fiber.

As discussed above, Autran does not teach a filler being made of kenaf fibers and does not teach positively adding fillers to the composition. Shimizu and McGraw do not intend biodegradability, or suggest the unexpectedly superior results of the present invention obtained by adding the kenaf fiber. Therefore, from the combination of Autran, Shimizu and McGraw, one skilled in the art would not arrive at the present invention having the unexpectedly superior results. Thus, Autran, Shimizu and McGraw do not suggest that a plant origin biodegradable

composition and a molded product thereof being excellent in processability, strength, impact resistance, heat resistance and water resistance at the same time can be obtained by the constitution of present invention in which kenaf fibers are present. These references do not disclose or suggest a composition and a molded product thereof which are improved in rate of crystallization, heat resistance and impact resistance by adding kenaf fibers. Accordingly, the present invention is unobvious over the combination of Autran, Shimizu and McGraw.

In view of the above, reconsideration and withdrawal of the § 103(a) rejection based on Autran in view of Shimizu and McGraw are respectfully requested.

Allowance is respectfully requested. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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